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IN-SITU-ETCH-ASSISTED HDP DEPOSITION USING SiF₄ AND HYDROGEN

ABSTRACT OF THE DISCLOSURE

A process is provided for depositing an undoped silicon oxide film on a substrate disposed in a process chamber. A process gas that includes SiF₄, H₂, a silicon source, and an oxidizing gas reactant is flowed into the process chamber. A plasma having an ion density of at least 10¹¹ ions/cm³ is formed from the process gas. The undoped silicon oxide film is deposited over the substrate with the plasma using a process that has simultaneous deposition and sputtering components. A temperature of the substrate during such depositing is greater than 450 °C.

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